



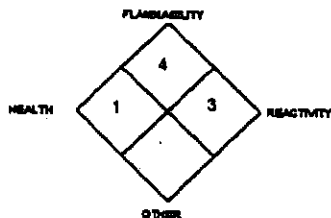
# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS

Standards

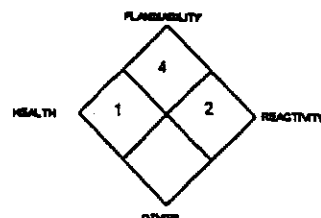
GAS

NFPA RATING



GAS DISSOLVED IN  
ACETONE

NFPA RATING



## PART I *What is the material and what do I need to know in an emergency?*

### 1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:

ACETYLENE - C<sub>2</sub>H<sub>2</sub>  
Document Number: P-0001

MANUFACTURER'S NAME:

AIRGAS INC.

ADDRESS:

Five Radnor Corporate Center  
Suite 550  
100 Matsonford Road  
Radnor, PA 19087

EMERGENCY PHONE:

CHEMTREC: 1-800-424-9300  
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BUSINESS PHONE:

DATE OF PREPARATION:

May 20, 1996

### 2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% v/v	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			OTHER
			TLV ppm	STEL ppm	PEL ppm	STEL ppm	IDLH ppm	
Acetylene	74-86-2	100	Simple Asphyxiant	NE	NE	NE	NE	NIOSH REL: 2500 ppm 15-min TWA ceiling  Matheson maximum recommended limit for exposure: 5000 ppm

NE = Not Established

C = Ceiling Level See Section 16 for Definitions of Terms Used.

NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

### 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This product is a colorless, odorless gas, dissolved in acetone. Acetylene gas poses an extreme fire hazard when accidentally released. The main health hazard associated with a release of this gas is asphyxiation by displacement of oxygen. The gas is lighter than air, and may spread long distances. Distant ignition and flashback are possible. A BLEVE (Boiling Liquid Expanding Vapor Explosion) may occur if containers of this product are exposed to heat for prolonged periods of time. Acetylene is an asphyxiant and presents a significant health hazard by displacing the oxygen in the atmosphere. Provide adequate fire protection during emergency response situations. Acetylene gas may decompose explosively at elevated temperatures and pressures. Acetylene can form very explosive metallic salts (such as with copper, mercury, and silver).

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of over-exposure for this product is by inhalation.

**INHALATION:** At concentration below the LEL of 2.5% (25000 ppm) this gas is essentially non-toxic. At higher concentrations, Acetylene has anesthetic effects. Symptoms of over-exposure to such high concentrations may include drowsiness, dizziness, and a general feeling of weakness.

High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with various levels of oxygen are as follows:

12-16% Oxygen: Breathing and pulse rate increased, muscular coordination slightly disturbed.

10-14% Oxygen: Emotional upset, abnormal fatigue, disturbed respiration.

6-10% Oxygen: Nausea and vomiting, collapse or loss of consciousness.

Below 6%: Convulsive movements, possible respiratory collapse, and death.

When administered with oxygen at concentrations of 10% or greater, Acetylene produces varying degrees of temporary narcosis.

**OTHER POTENTIAL HEALTH EFFECTS:** The gas is generally non-irritating to the skin and eyes. Acetylene is dissolved in acetone. Any skin or eye contact with the acetone component of this product may be slightly irritating to contaminated skin or eyes.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in Lay Terms. Over-exposure to Acetylene may cause the following health effects:

**ACUTE:** The most significant hazard associated with this product is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, ringing in ears, headaches, shortness of breath, wheezing, headache, dizziness, indigestion, nausea, and, at high concentrations, unconsciousness or death may occur. The skin of a victim of over-exposure may have a blue color.

**CHRONIC:** There are currently no known adverse health effects associated with chronic exposure to the components of this compressed gas.



#### HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	1
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FLAMMABILITY	(RED)	4
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REACTIVITY	(YELLOW)	3
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PROTECTIVE EQUIPMENT	B
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EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For routine industrial applications

## PART II *What should I do if a hazardous situation occurs?*

### 4. FIRST-AID MEASURES

**RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT.** At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant Personal Protective equipment should be worn. Adequate fire protection must be provided during rescue situations.

Remove victim(s) to fresh air, as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardiopulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

## 4. FIRST-AID MEASURES (Continued)

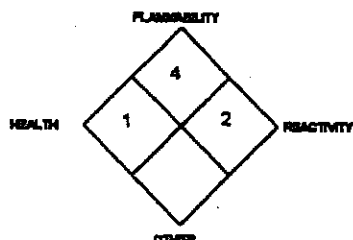
**EYE EXPOSURE:** If the liquid portion of this product (acetone) splashes into eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes.

Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

## 5. FIRE-FIGHTING MEASURES

### GAS DISSOLVED IN ACETONE

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**FLASH POINT, (method):** Not applicable to a flammable gas.

**AUTOIGNITION TEMPERATURE:** 305 °C; 581 °F

**FLAMMABLE LIMITS (in air by volume, %):**

**Lower (LEL):** 2.5%

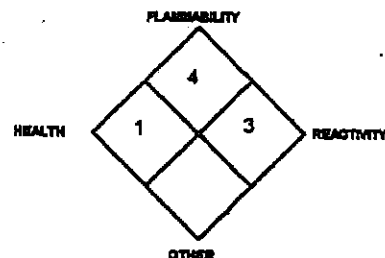
**Upper (UEL):** 82%

100% with substantial energy source and under certain conditions of pressure, container size and shape.

**FIRE EXTINGUISHING MATERIALS:** Extinguish fires of this gas by shutting-off the source of the gas. Use water spray to cool fire-exposed structures and

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equipment.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** When involved in a fire, this material may decompose and produce toxic gases including carbon monoxide and carbon dioxide. Acetylene gas is extremely flammable and can readily form explosive mixtures with air over a very wide range. An explosion hazard exists in confined spaces. Pure Acetylene can explode under certain conditions of elevated pressure, temperature and container size. Acetylene reacts with active metals to form explosive acetylides compounds.

**DANGER!** Fires impinging (direct flame) on the outside surface of unprotected pressure storage vessels of this product can be very dangerous. After approximately 10-30 minutes of direct flame exposure, a BLEVE (Boiling Liquid Expanding Vapor Explosion) is likely. This is a catastrophic failure of the vessel releasing the contents into a massive fireball and explosion. The resulting fire and explosion can result in severe equipment damage and personnel injury or death over a large area around the vessel. For massive fires in large areas, use unmanned hose holder or monitor nozzles; if this is not possible, withdraw from area and allow fire to burn.

**Explosion Sensitivity to Mechanical Impact:** Not Sensitive.

**Explosion Sensitivity to Static Discharge:** Static discharge may cause this product to ignite explosively.

**SPECIAL FIRE-FIGHTING PROCEDURES:** The best fire-fighting technique may be simply to let the burning gas escape from the pressurized cylinder, tank car, or pipeline. Stop the leak before extinguishing fire. If the fire is extinguished before the leak is sealed, the still-leaking gas could explosively re-ignite without warning and cause extensive damage, injury, or fatality. In this case, increase ventilation (in enclosed areas) to prevent flammable or explosive mixture formation. Structural fire-fighters must wear Self-Contained Breathing Apparatus and full protective equipment. Because of the potential for a BLEVE, evacuation of non-emergency personnel is essential. If water is not available for cooling or protection of vessel exposures, evacuate the area. The DOT Emergency Response Guidebook (Guide #17) recommends 0.5 miles. Other information for pre-planning can be found in the American Petroleum Institute Publications 2510 and 2510A and the DOT Emergency Response Guidebook.

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people, and respond with trained personnel. Adequate fire protection must be provided.

Minimum Personal Protective Equipment should be Level B: fire-retardant protective clothing, mechanically-resistant gloves and Self-Contained Breathing Apparatus. Use only non-sparking tools and equipment. Locate and seal the source of the leaking gas. Protect personnel attempting the shut-off with water-spray. Allow the gas to dissipate. Monitor the surrounding area for oxygen and combustible gas levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Combustible gas concentration must be below 10% of the LEL prior to entry. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

**THIS IS AN EXTREMELY FLAMMABLE GAS.** Protection of all personnel and the area must be maintained.

## **PART III** *How can I prevent hazardous situations from occurring?*

### **7. HANDLING and STORAGE**

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product IN YOU. Do not eat or drink while handling this product. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product without any significant warning symptoms.

**STORAGE AND HANDLING PRACTICES:** Cylinders should be stored in dry, well-ventilated areas away from sources of heat and fire. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and away from Post "No Smoking or Open Flames" signs in storage or use areas. Avoid storage for over six months and keep the minimum quantity necessary on-site at any one-time. In the United States, cylinders of Acetylene stored inside buildings at the locations are limited to a total capacity of 2500 ft<sup>3</sup> (70 m<sup>3</sup>). In Canada, the limit is for a total capacity of 2160 ft<sup>3</sup> (60 m<sup>3</sup>) in non-sprinklered and 6130 ft<sup>3</sup> (170 m<sup>3</sup>) in building with sprinkler systems. After these quantities are exceeded, a special room must be provided for storage of Acetylene. Consider installation of leak detection and alarm for storage area.

Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. This will prevent acetone released from the cylinder. Cylinders can be stored in the open, but in such cases, should be protected against extremes of temperature and from the dampness of the ground to prevent rusting.

Use non-sparking ventilation systems, approved explosion-proof equipment, and appropriate electrical systems. Keep cylinders stored as small as possible. Store away from process and production areas, away from elevators, building and room exits, and aisles leading to exits. Keep storage area clear of materials which can burn. Have appropriate extinguishing equipment available in storage area (i.e. sprinkler system, portable fire extinguishers).

It is important to note that Acetylene, in its free state, under pressure, may decompose violently. The higher the pressure, the less the initial force necessary to cause an explosion. Therefore, never use the free gas outside the cylinder at pressures above 15 psig. If pressures exceeding this limit are utilized, special explosion and fire safety precautions must be implemented.

**SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS:** Protect cylinders against physical damage. Store in a well-ventilated area, away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to become isolated from halogens and oxidizers such as oxygen, chlorine, or fluorine. Use a check valve or trap in the discharge line to prevent hazardous backflow. Never tamper with safety devices in valves and cylinders. Electrical equipment should be non-sparking or explosion proof. The following rules are applicable to work situations in which cylinders are being used:

**Before Use:** Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place until cylinder is ready for use.

**During Use:** Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by fire or increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

**After Use:** Close main cylinder valve. Valves should be closed tightly, to prevent evaporation of acetone. Replace valve protection cap. Mark empty cylinders "EMPTY".

**NOTE:** Use only DOT or ASME code containers. Earth-ground and bond all lines and equipment associated with this product after each use and when empty. Cylinders must not be recharged except by or with the consent of manufacturer. For more information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers* or refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres" and NFPA Bulletin 58.

For welding and brazing operations, refer to ANSI Z-49.1 "Safety in Welding and Cutting" and OSHA safety regulations for welding, cutting, and brazing (29 CFR 1910.252).

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in the MSDS (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas (i.e. nitrogen) before attempting repairs. Always use product in areas where adequate ventilation is provided.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation. Local exhaust ventilation is preferred, because it prevents Acetylene dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen and the presence of potentially explosive air-gas mixtures.

**RESPIRATORY PROTECTION:** Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of this product. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standards.

**EYE PROTECTION:** Splash goggles or safety glasses, for protection from rapidly expanding gases and splashes of the acetone.

**HAND PROTECTION:** Wear mechanically-resistant gloves when handling cylinders of this product. Wear Solvex or neoprene gloves if operations could lead to a potential exposure to acetone.

**BODY PROTECTION:** Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to protect employees from splashes of liquefied product, as well as fire retardant items.

## 9. PHYSICAL and CHEMICAL PROPERTIES

**VAPOR DENSITY (air = 1):** 0.908

**SPECIFIC GRAVITY:** 0.906

**SOLUBILITY IN WATER:** 1.7 vol/vol at °C and 1 atmosphere.

**EVAPORATION RATE:** Not applicable.

**pH:** Not applicable.

**MELTING POINT:** -81 °C; -1130 °F

**BOILING POINT:** -84 °C; 193 °F (sublimation point).

**EXPANSION RATIO:** Not available.

**APPEARANCE AND COLOR:** Colorless gas with ethereal or garlic-like odor from impurities.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** There are no distinct warning properties. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

## 10. STABILITY and REACTIVITY

**STABILITY:** Acetylene is stable at standard temperatures and pressures. Gaseous acetylene may decompose explosively at elevated temperatures and pressures. The higher the pressure, the more likely it is for an explosion to occur.

**DECOMPOSITION PRODUCTS:** Carbon and hydrogen. When ignited in the presence of oxygen, carbon monoxide and carbon dioxide.

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** Acetylene is not compatible with the following materials: Strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride); brass; calcium hypochlorite; various heavy metals (copper, silver, mercury) and the salts of these metals; halogens (bromine, chlorine, iodine, fluorine); hydrides (i.e. sodium hydride, cesium hydride); ozone; perchloric acid; potassium).

**HAZARDOUS POLYMERIZATION:** Can occur when heated or under pressure.

**CONDITIONS TO AVOID:** Contact with incompatible materials and exposure to heat, sparks and other sources of ignition. Cylinders exposed to extremely high temperatures can rupture or explode. Liquid nitrogen should not be used as a trap, as it may cause acetylene to condense to its liquid or solid state, both of which are explosive.

## PART IV *Is there any other useful information about this material?*

## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** The following information is for Acetylene.

TCLo (Inhalation, human) = 20 pph; central nervous system, respiratory system effects.

LCLo (Inhalation, human) = 50 pph/5 minutes

LCLo (Inhalation, human) = 500,000 ppm/5 minutes

For data pertaining to the effects of Acetylene inhalation on humans is as follows:

Concentration

Symptom

100,000 ppm  
200,000 ppm  
300,000 ppm  
350,000 ppm

Intoxication (drowsiness, dizziness, giddiness).  
Severe intoxication.  
Loss of coordination.  
Unconsciousness after 5 minutes of exposure.

## 11. TOXICOLOGICAL INFORMATION (Continued)

**Effects on Short-Term Inhalation:** Animals have shown tolerance to 10% Acetylene. In studies with dogs, cats, and rabbits, Acetylene acts as an anesthetic at 20% exposure. Recovery occurs if the oxygen level is maintained. In an oxygen-deficient environment, death may occur after 5-10 minutes. Rodents exposed to 25, 50, and 80 percent Acetylene in oxygen for 1-2 hours daily (93 hours total exposure), evidenced no weight change or cellular damage. Mixtures of 80% Acetylene/20% oxygen caused a rise in blood pressure in an exposed cat.

**SUSPECTED CANCER AGENT:** Acetylene is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA.

**IRRITANCY OF PRODUCT:** This product is not irritating; however, contact with the acetone component of this product can be slightly irritating to contaminated skin or eyes.

**SENSITIZATION TO THE PRODUCT:** Acetylene is not known to cause sensitization in humans.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this product and its components on the human reproductive system.

**Mutagenicity:** No mutagenicity effects have been described for Acetylene.

**Teratogenicity:** No teratogenicity effects have been described for Acetylene.

**Reproductive Toxicity:** No reproductive toxicity effects have been described for Acetylene.

A **mutagen** is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. A **teratogen** is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance which interferes in any way with the reproductive process.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Acute or chronic respiratory conditions may be aggravated by over-exposure to the components of this product.

**RECOMMENDATIONS TO PHYSICIANS:** Administer oxygen, if necessary; treat symptoms; reduce or eliminate exposure. There are no Biological Exposure Indices for this product.

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL STABILITY:** This gas will be dissipated rapidly in well-ventilated areas.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** Any adverse effect on animals would be related to oxygen deficient environments and the anesthetic properties of Acetylene at high concentrations of exposure. No adverse effect is anticipated to occur to plant-life.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** No evidence is currently available on this product's effects on aquatic life.

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This gas, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

**EPA WASTE NUMBER:** D001 (Characteristic, Ignitable); applicable to wastes consisting only of this product.

## 14. TRANSPORTATION INFORMATION

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

<b>PROPER SHIPPING NAME:</b>	Acetylene, dissolved
<b>HAZARD CLASS NUMBER and DESCRIPTION:</b>	2.1 (Flammable Gas)
<b>UN IDENTIFICATION NUMBER:</b>	UN 1001
<b>PACKING GROUP:</b>	Not applicable.
<b>DOT LABEL(S) REQUIRED:</b>	Flammable Gas
<b>EMERGENCY RESPONSE GUIDE NUMBER:</b>	17

**MARINE POLLUTANT:** Acetylene is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the following information for the preparation of Canadian Shipments.

<b>PROPER SHIPPING NAME:</b>	Acetylene, dissolved
<b>HAZARD CLASS NUMBER and DESCRIPTION:</b>	2.1 (Flammable Gas)

## 15. REGULATORY INFORMATION

**SARA REPORTING REQUIREMENTS:** This product is subject to the reporting requirements of Sections 302, 304 and of the Superfund Amendments and Reauthorization Act, as follows:

COMPONENT	SARA 302	SARA 304	SARA 313
Acetylene	NO	NO	NO

**SARA Threshold Planning Quantity:** Not applicable.

**TSCA INVENTORY STATUS:** Acetylene is listed on the TSCA Inventory.

**CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.

**OTHER FEDERAL REGULATIONS:** Acetylene is subject to the reporting requirements of Section 112(r) of the Clean Air Act. Threshold Quantity for this gas is 10,000 pounds. Depending on specific operations involving the use of this product, the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119).

**STATE REGULATORY INFORMATION:** Acetylene is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Acetylene.

California - Permissible Exposure Limits for Chemical Contaminants: Acetylene.

Florida - Substance List: Acetylene.

Illinois - Toxic Substance List: Acetylene.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Acetylene.

Minnesota - List of Hazardous Substances: Acetylene.

Missouri - Employer Information/Toxic Substance List: Acetylene.

New Jersey - Right to Know Hazardous Substance List: Acetylene.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substances: Acetylene.

Rhode Island - Hazardous Substances: Acetylene.

Texas - Hazardous Substances: Acetylene.

West Virginia - Hazardous Substances: No.

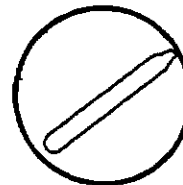
Wisconsin - Toxic and Hazardous Substances: No.

**CALIFORNIA PROPOSITION 65:** Acetylene is not on the California Proposition 65 lists.

**LABELING (Precautionary Statements):** DANGER! Extremely flammable gas. Asphyxiant Gas. Acetylene gas may explode at elevated temperatures and pressures. Acetylene can form very explosive metallic salts (such as with copper and silver). Acetylene gas can displace oxygen. Provide adequate ventilation to avoid over-exposure. Avoid contact from the cylinder, which may be irritating to contaminated skin and eyes. Promptly seek medical attention for over-exposure. Avoid heat, sparks, or sources of ignition. Gas may spread over a considerable distance to an ignition source and may explode. Do not allow gas accumulation in confined locations. Trained employees must control releases per procedures designed to prevent fire. In case of fire, shut-off source and apply cooling water to potentially exposed structure, and equipment. Fires impinging (direct flame) on the outside surface of unprotected pressure storage vessels can be very dangerous. After approximately 10-30 minutes of direct flame exposure, a BLEVE (Boiling Liquid Expanding Vapor Explosion) is likely. This is a catastrophic failure of the vessel releasing the contents into a massive fireball and explosion resulting fire and explosion can result in severe equipment damage and personnel injury or death over a large area around the vessel. For massive fires in large areas, use unmanned hose holder or monitor nozzles; if this is not possible, withdraw from area to burn. Keep away from oxidizing material, metals (copper, mercury, silver brass) and metal salts. Keep unused cylinder and away from heat or direct sunlight. Static electricity may be generated when handling. Use proper grounding procedures. Do not pressurize, weld, cut, braze, solder, grind or drill on or near full or empty containers. Empty containers may explode if subjected to heat or fire. See MSDS for additional information.

**TARGET ORGANS:** Respiratory system, central nervous system.

**WHMIS SYMBOLS:**



## 16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.  
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619/565-0302

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